

## Expert Neurosurgical Management of Tumors Available in Northern Michigan

Nearly all neurosurgical problems that present in northern Michigan can be managed by a team of board certified neurosurgeons at Munson Medical Center. The four-member team has the expertise, as well as the diagnostic and therapeutic tools needed to manage most cases.

"Surgical management of brain tumors is dear to the hearts of all the neurosurgeons at Munson Medical Center. It is important that patients know they do not have to leave the area to get such care," said **John Cilluffo, MD**, a neurosurgeon at Munson Medical Center. "We manage brain tumors, including pituitary tumors resected via transsphenoidal approaches."

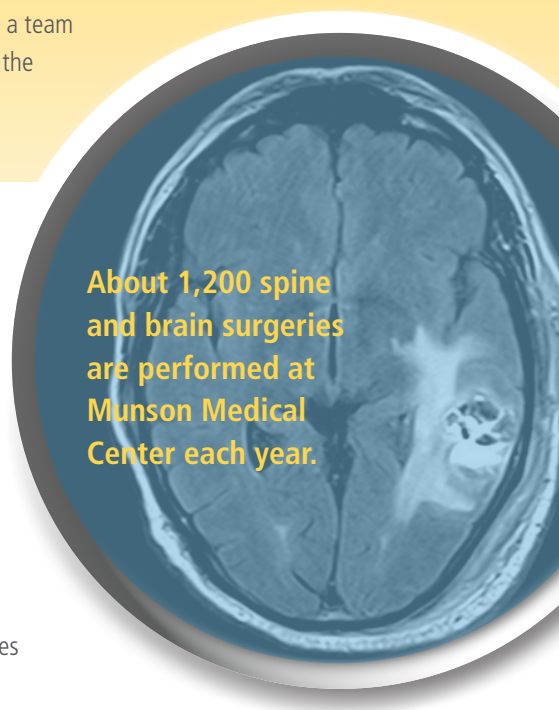
The infection rate for all brain and spine surgeries at Munson Medical Center is about 1 percent, well below the national average of above 5 percent.

**"Neurosurgery consistently has patient satisfaction that is above the 90th percentile,"** Cilluffo said. "Procedures today are completed with smaller incisions with less blood loss and shorter hospital stays using better imaging and localization techniques than ever before. We are proud of our results."

### Managing Glioblastoma Multiforme

Glioblastoma multiforme (GBM) is by far the most common and most malignant of the glial tumors; it primarily affects adults, and is located preferentially in the cerebral hemispheres. Attention was drawn to this form of brain cancer when Senator Ted Kennedy was diagnosed with and died from glioblastoma. "This type of tumor is most common as people age and can occur anywhere within the brain or the spinal cord," Cilluffo said. "About 55-60 percent of the tumors we remove are malignant." All of the neurosurgeons are expert in microsurgical techniques, stereotactic localization of tumors, and postoperative management, as well as coordination of care, including referral to oncologists and radiation therapists.

*(continued on page A2)*



#### Inside:

**A2**  
**Managing Pituitary Tumors**  
Transsphenoidal surgery is used to remove pituitary tumors

**A3**  
**Image-guided Surgery**  
O-arm® technology helps surgeons make precise screw placement

**A4**  
**X-STOP for LSS Patients**  
Procedure rapidly reduces pain, restores function, quality of life

**A5**  
**SRS at Munson Medical Center**  
Coming in 2012: Northern Michigan's first SRS device

**A6**  
**Two of Region's Hospitals are in Top 100**  
Mercy Hospital Cadillac, Munson Medical Center honored for top quality

**A6**  
**Kyphoplasty for VCF Patients**  
10 northern Michigan spine specialists perform procedure

## How Patients Present

“The majority of patients diagnosed with this disease present to the Emergency Room or to their primary physician with symptoms that most people would not recognize as those occurring in a patient with a brain tumor,” Cilluffo said.

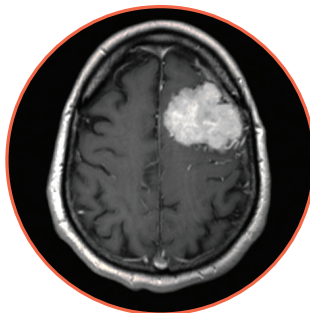
The most common symptom of primary brain tumor is impairment of brain function in relationship to the location of the tumor. “One of the common symptoms is personality or behavior changes that are rapidly progressive and uncharacteristic for the individual,” Cilluffo said. “If the tumor arises in the left side of the brain, a patient may present with aphasia. Occasionally people present with weakness on one side, numbness, or headaches.”

Treatment of glioblastomas is palliative. “Management of this disease involves a multidisciplinary approach involving one or more medical specialties, including at times, endocrinology, as well as general internal medicine, practiced so well at Munson Medical Center by our hospitalist service,” Cilluffo said.

## Noncancerous and Pituitary Tumors

Some noncancerous tumors are curable with surgery or radio-surgery and sometimes with chemotherapy or endocrine therapy, alone or in combination. Most common are meningioma, pituitary tumor, and acoustic neuroma.

“The majority of meningiomas are relatively accessible when they are large enough to justify surgery and are usually managed by surgical excision with a very high cure rate and relatively low




mortality and morbidity,” Cilluffo said. “Some tumors are incredibly large when they present and those are the most dangerous to manage surgically, or otherwise.”

Skull base tumors that are likely to be surrounding and attached to vital structures at the base of the skull, such as the carotid arteries, the cavernous sinus, the optic nerves, and the brain stem, are treated with radiation because they are not safe to approach surgically. “The vast majority of other meningiomas are surgically approachable with relative safety,” Cilluffo said. “Some tumors are found before they are symptomatic; these are small and frequently do not require surgery. We follow a significant number of people in the area who have small and relatively or totally asymptomatic tumors. If during follow up, the tumors grow or develop surrounding edema in the brain, surgical removal is recommended.”

Another nonlignin tumor includes pituitary tumors, which can cause endocrine logical changes. “We use intraoperative micro-surgical techniques for transsphenoidal tumor removal, with endoscopic assistance from the ENT surgeon and micro-surgical excision by the neurosurgeon,” Cilluffo said. Pituitary tumors most likely occur in older adults and people with a family history of certain hereditary conditions, such as multiple endocrine neoplasia, type 1 (MEN1). “Some pituitary tumors release a hormone called prolactin and can be managed with medications such as Parlodel,” Cilluffo said. “Other tumors release growth hormones that can cause conditions such as acromegaly or gigantism. Another type secretes adrenocorticotrophic hormone (ACTH) and can cause Cushing’s disease. All of these tumors often require surgical removal and can be approached via a transsphenoid endoscopic and microscopic assisted stealth guided surgical excision.”

## Meet Munson’s Neurosurgery Team

	Medical School	Residency	Clinic Locations
<b>John M. Cilluffo, MD</b>	Wayne State University	Mayo Medical School	Alpena, Cheboygan, Petoskey, Traverse City
<b>Paul F. Davis, MD</b>	New Jersey Medical School	Albany Medical Center	Traverse City
<b>Thomas C. Schermerhorn, MD</b>	Wayne State University	Mayo Medical School	Cadillac, Charlevoix, Traverse City
<b>J. Eric Zimmerman, MD</b>	Ohio State University	University of California	Cadillac, Gaylord, Ludington, Manistee, Traverse City



“All of us are truly grateful to have this technology; Munson Medical Center is staying on the cutting edge of technology in medicine.”

**John Cilluffo, MD**

Surgery patients at Munson Medical Center are benefitting from a recent \$800,000 intraoperative imaging upgrade, including the O-arm® Surgical Imaging System, and a newly acquired StealthStation®S7™System. **Munson Medical Center is one of four hospitals in Michigan using the O-arm device.**

“Together, this provides neurosurgeons with unprecedented accuracy in the placement and verification for screw placements in the operating room that are not available in any other way, short of a CT scan done in the OR,” said Munson neurosurgeon **John Cilluffo, MD**. “The 3D scan allows us to accurately measure the size, length, and angle needed for optimal screw placement.”

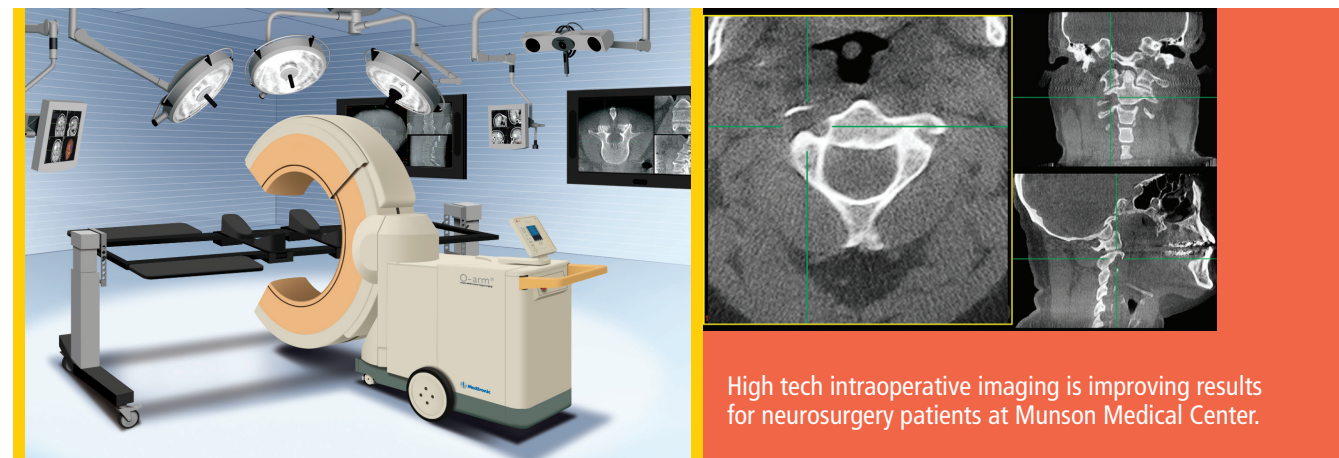
O-arm® offers complete multi-dimensional surgical imaging optimal for use in spine, orthopaedic, and trauma-related surgeries. The system provides real-time, high quality images across a large field-of-view for both low-radiation 2D fluoroscopic images or full 3D reconstructions in standard and high definition. Fast 3D reconstruction displays axial, coronal, and sagittal views in seconds. The nearly 6-foot-tall system, shaped like an O, surrounds a portion of the patient’s body as it lies on the

operating table and sends images in about 30 seconds, providing surgeons with pictures not offered by other technologies.

The system can be used to view any part of the patient’s skeletal anatomy. Surgeons are able to perform less invasive procedures and confirm the precision of advanced surgical procedures before the patient leaves the OR.

“It reduces the likely need for replacement or removal of a screw, or use of a screw that is not the proper width or length,” Cilluffo said. “The O-arm, together with the intraoperative stealth navigation, provides all the information needed. Since we’ve been using it, we have not put in one screw that has been in any way too long, too short, or other than ideally situated within the pedicles.”

“In the literature, 15 percent of screws placed with standard 2D non-navigational screw placement are not ideal,” Cilluffo added. “So, for the patient – depending on how good the surgeon is with 2D non-navigational placement – it reduces their chances for screw misplacement by about 15 percent. The O-arm and stealth intraoperative navigation, in my opinion, significantly lessens the possibility of potential injury to a patient by a misplaced screw.”



## New Procedure Can Restore Quality of Life to Severe Back Pain Sufferers

Spine specialists in northern Michigan are offering a minimally invasive solution to patients with lumbar spinal stenosis (LSS) who may not be good candidates for traditional, more invasive surgery. LSS is the most common reason for back surgery in people 65 and older.

The X-STOP® Spacer is the first interspinous process decompression device to treat the symptoms of LSS. It has been available in northern Michigan for about five years.

The X-STOP Spacer is implanted between the spinous processes through a small incision in the lower back; it lifts the vertebra off the pinched nerve, resulting in a rapid reduction of pain and improved physical function. The device is designed to stay safely and permanently in place without being attached to bone or ligaments by screws or other hardware, and there is no fusion involved.

"X-STOP is most effective when there is moderate to severe stenosis at one or two levels of the lumbar spine which results in leg symptoms that could be classified as radicular pain or clauditory type pain," said **Louis S. Habryl, DO**, an orthopaedic surgeon at Otsego Memorial Hospital in Gaylord.

Based on a patient's medical condition and history, X-STOP may be an option when conventional treatments, such as physical therapy and epidural injections, are no longer effective, or if a patient does not want to undergo traditional LSS surgery. "The referring physician should consider this procedure even in patients who they may not consider good surgical risks, but who have symptoms that have been difficult to control with more conservative means," Habryl said.

"You can help an elderly person with lumbar spinal stenosis when it is threatening or interfering with their quality of life," said **J. Eric Zimmerman, MD**, a neurosurgeon at Munson Medical Center. "The most common scenario is someone

presenting with activity-related leg dysfunction or sensation relieved by sitting down. Classic LSS sufferers are busy, and it is driving them crazy."

"With traditional laminectomy, which removes part of the vertebrae, patients are out six to eight weeks for recovery and they may be scared of an invasive back operation that removes bone," Zimmerman added. "With X-STOP, recovery is one to two weeks, and it can be appropriate for people for whom a more invasive procedure would be contraindicated."

Benefits, compared to decompressive laminectomy, include:

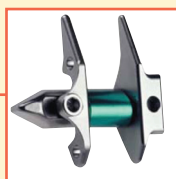
- A shorter procedure, typically 45 to 90 minutes, performed for some patients on an outpatient basis and with local anesthesia, an important benefit for people who should avoid general anesthesia due to age or other health conditions.
- No removal of the lamina or ligaments that protect and stabilize the spine.
- Potential of a shorter recovery time; in clinical studies, patients who received traditional laminectomy required as long as six months before they could resume some normal physical activities.

"Patient outcomes with X-STOP are similar to more invasive procedures with the same diagnosis," Habryl said. "Patient comments are generally very good, with symptom relief being either complete or with enough improvement that the patient is now tolerant of any residual symptoms. Patients generally feel that rehabilitation was very easy and uncomplicated."

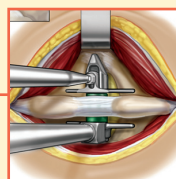
**Referrals** | Munson Healthcare affiliated surgeons in northern Michigan trained to perform the X-STOP Spacer procedure include:

<b>Louis S. Habryl, DO</b>	<b>(989) 732-1753</b>	Gaylord
<b>Vincent Prusick, MD</b>	<b>(231) 935-0900</b>	Traverse City
<b>J. Eric Zimmerman, MD</b>	<b>(231) 941-7312</b>	Traverse City

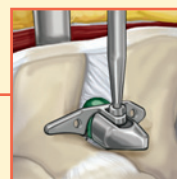
### X-STOP | How It Works



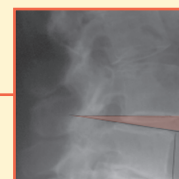
The device



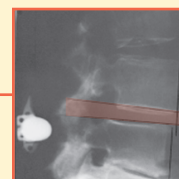
Placement of implant



Placement of implant

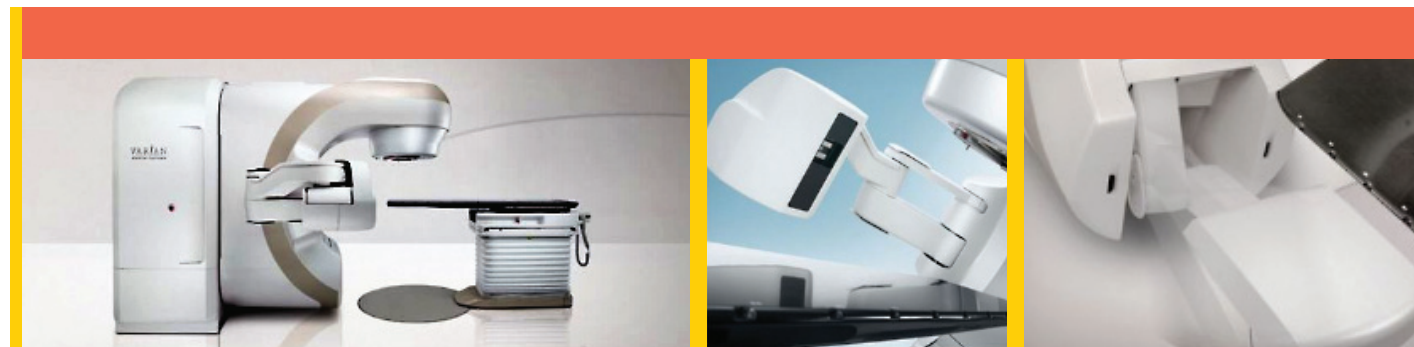


Before - tight Foramen collapsed



After - increased Foramina height

## Stereotactic Radiosurgery Coming to Munson Medical Center in 2012



The True Beam™ medical linear accelerator, cleared for sale by the Food and Drug Administration in December 2009, delivers more flexible cancer treatments with pinpoint accuracy, precision, ease, and speed.

A new stereotactic radiosurgery (SRS) device is expected to be installed at Munson Medical Center by the end of the year and in service by spring 2012.

This \$9.5 million project is an interim approach to improving cancer services in northern Michigan until resources become available to proceed with a proposed \$50 million comprehensive cancer center.

The TrueBeam™ medical linear accelerator is capable of both conventional radiation treatment and SRS. Plans are for it to be installed in the hospital's lower level in an area accessible from the Biederman Cancer Center. Both the SRS device and the vault it is housed in could be relocated to a future cancer center.

### SRS: Fast, Powerful, Precise

Munson Medical Center will be among the first hospitals in the United States to install the TrueBeam device, which made its national debut at New York's Memorial Sloan-Kettering Cancer Center in April 2010. Radiation oncologists have called it "a game-changer" because of its speed, power, and precision.

SRS delivers high doses of targeted radiation to tumors. With conventional radiation therapy treatment, healthy tissue nearby also receives radiation. Stereotactic radiosurgery better focuses the radiation on the abnormal area.

Today, the closest SRS device of any kind is in Midland. Adding SRS at Munson Medical Center offers significant advantages for patients in northern Michigan: "This is a noninvasive procedure that will be offered close to home so people do not have to travel for this advanced treatment option," said radiation oncologist **David Heimburger, MD**.

"It is typically delivered on an outpatient basis in one to five treatments," Heimburger said. "The high radiation dose is as effective as surgery and can be used to treat small tumors of the brain, lung, liver, and endocrine system that are not operable."

Traverse City neurosurgeon **John Cilluffo, MD**, said the SRS device will allow neurosurgeons at Munson Medical Center to handle nearly all tumors in nearly all locations of the brain. "This will eliminate the need for patients with most brain tumors or other brain/spine lesions to leave northern Michigan for state-of-the-art care," Cilluffo said. "All four neurosurgeons at Munson Medical Center are pleased and look forward to using this marvelous technology to benefit our patients."

"The SRS device will allow neurosurgeons at Munson to handle nearly all tumors in nearly all locations of the brain."

**John Cilluffo, MD**

## Two of the Nation's Top 100 Hospitals are in Northern Michigan

Two northern Michigan hospitals associated with Munson Healthcare are among the *100 Top Hospitals* in the nation, according to Thomson Reuters, a health care information and solutions company in Ann Arbor, Mich.

**Munson Medical Center** was named to the list for 13th time, and is one of three hospitals in the nation honored so often for top quality and operational performance. **Mercy Hospital Cadillac** received Top 100 honors for the second time.

The *100 Top Hospital* designation is noteworthy because it is based on annual quantitative research that identifies hospitals with the best facility-wide performance. Thomson Reuters researchers include epidemiologists, physicians, statisticians, and former hospital executives who evaluate public data sources to develop an independent assessment of clinical care, patient perception of care, operational efficiency, and financial stability. Hospitals do not apply for or pay for *100 Top Hospital* status.

"Quality at any hospital begins with its Medical Staff," said Ed Ness, President and CEO of Munson Healthcare and Munson Medical Center. "To achieve Top 100 status even once is a great achievement. To sustain that top level of quality over time is remarkable."

Thomson Reuters uses 10 performance comparisons to measure clinical quality: risk-adjusted mortality and complications indexes, 30-day mortality and readmission rates, risk-adjusted patient safety index, and core measure scores for heart attack, heart failure, pneumonia, pregnancy and related conditions, and surgical infection prevention as developed by the Joint Commission and the Centers for Medicare and Medicaid Services (CMS) Hospital Compare data set. It also evaluates length of stay, expense per adjusted discharge, operating profit margin, and patient satisfaction.

Details about the *100 Top Hospitals* designation can be found at [100tophospitals.com](http://100tophospitals.com).



## Pain From Spinal Fracture Can Be Resolved with Balloon Kyphoplasty

**Half of all women and 25 percent of men age 50 or older will have an osteoporosis-related fracture in their lifetime, according to the National Osteoporosis Foundation.**

Primary care physicians are likely to see an increase in Vertebral Compression Fractures (VCFs) as the population of northern Michigan ages. As many as two-thirds of spinal fractures go undiagnosed and untreated, often because patients consider back pain a normal part of aging and don't discuss it with their physician.

Balloon Kyphoplasty is a minimally invasive treatment available in northern Michigan that can dramatically improve a patient's quality of life, reduce pain, improve mobility, and correct vertebral body angular deformity. "The procedure typically takes less than an hour, and is indicated for patients who have a VCF as a result of osteoporosis or an injury from a fall," said **J. Eric Zimmerman, MD**, a neurosurgeon at Munson Medical Center. Ten Munson Healthcare spine specialists perform balloon kyphoplasty (see list).

### Early VCF Diagnosis Can Result in Optimal Treatment

Any patient with acute onset of back pain should be evaluated for VCF. Physical examination can show:

- Tenderness to palpation of spinous processes
- Thoracic kyphosis, or loss of lumbar lordosis
- Dowager's hump
- Loss of total body height
- Pain is typically central or axial but can radiate, especially if nerve roots are involved

Patients can be tachypneic due to loss of pulmonary function, and may experience gastric dysfunction, sleep disorders, as well as depression. Diagnosis can be confirmed with radiographic studies. An MRI will distinguish whether a VCF is acute; edema present inside the vertebral body indicates the fracture is not yet completely healed.

"The earlier the procedure is done following the fracture, the better," Zimmerman said. "Balloon kyphoplasty is not appropriate for old and previously-healed compression fractures."

### Procedure vs. Medication

Some patients are prescribed pain medication that could be avoided. "This injury is disabling and it doesn't have to be that way," Zimmerman said. "Patients are sometimes spending more on pain meds than it costs to perform the procedure."

Traditional treatment for VCF has included bed rest, medication, and back bracing. Bed rest has been shown to result in rapid (< 1 week) bone demineralization, which worsens osteoporosis and may make subsequent fractures more likely. Left untreated, VCFs are associated with an increased risk of future fractures, chronic pain, spinal deformity, and kyphosis all of which can dramatically impact a patients' quality of life.

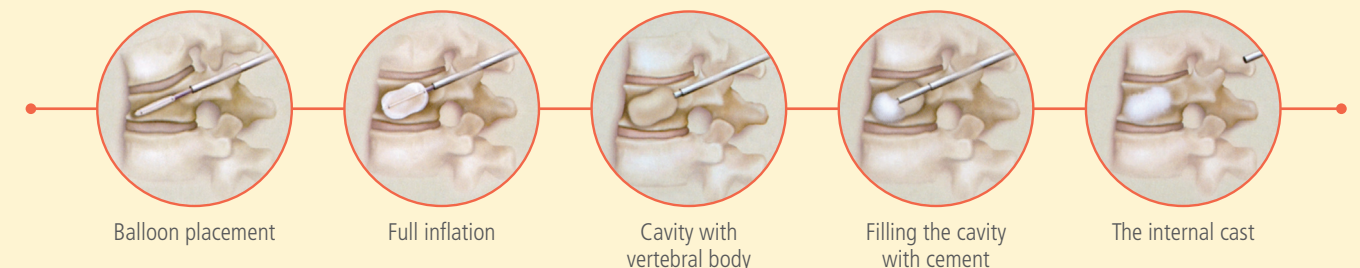
Balloon kyphoplasty can be performed as an inpatient or outpatient procedure with little or no postoperative rehabilitation necessary.

Most patients return to normal activities within a few days.

Ann Sampson, a 48-year-old respiratory therapist at Munson Medical Center, sustained a VCF when she slipped on an icy step in February. "The pain was severe with every step I took," she said. "If I can't walk, I can't do my job. I was taking pain meds six times a day."

Zimmerman performed kyphoplasty in March and Sampson was back at work one week later. "I would recommend it," Sampson said. "Most days I am good to go. I like the fact that there weren't any staples – the procedure left a tiny, tiny scar. It's not instant, but once you recover from surgery you're going to feel so much better – oh, my goodness. My back is at about 85 percent. Since surgery I've had five bad days – all when the weather changed. Dr. Zimmerman did a good job."

### Balloon Kyphoplasty | How It Works



If you have a patient with VCF who may benefit from balloon kyphoplasty, consults are available from the following Munson Healthcare affiliated spine specialists in northern Michigan:

	Specialty	Phone	Clinic Locations
<b>Andrew S. Boyce, MD</b>	Orthopaedics	(231) 935-0900	Traverse City
<b>Frederick J. Brodeur, MD</b>	Radiology	(231) 935-2861	Cadillac, Frankfort, Kalkaska, Traverse City
<b>John Cilluffo, MD</b>	Neurosurgery	(231) 935-5720	Alpena, Cheboygan, Petoskey, Traverse City
<b>Daniel P. Dall'Olmo, MD</b>	Radiology	(231) 935-2861	Cadillac, Frankfort, Kalkaska, Traverse City
<b>Paul F. Davis, MD</b>	Neurosurgery	(231) 935-5961	Traverse City
<b>Louis S. Habryl, DO</b>	Orthopaedics	(989) 732-1753	Gaylord
<b>Robert L. Halter, DO</b>	Orthopaedics	(989) 732-1753	Gaylord, Grayling
<b>Michelle M. Lung, MD</b>	Radiology	(231) 935-2861	Cadillac, Frankfort, Kalkaska, Traverse City
<b>James P. Picotte, MD</b>	Radiology	(231) 935-2861	Cadillac, Traverse City
<b>J. Eric Zimmerman, MD</b>	Neurosurgery	(231) 941-7312	Cadillac, Gaylord, Ludington, Manistee, Traverse City